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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,406	07/01/2003	Jens Gebhardt	06580024AA	9432

7590 12/29/2004  
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EXAMINER

BARNEY, SETH E

ART UNIT	PAPER NUMBER
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3752

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/609,406	GEBHARDT, JENS	
	<b>Examiner</b>	<b>Art Unit</b>	
	Seth Barney	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 5-12, 14, 16, 17, 21-23 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 13, 15, 18-20 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 5-12, 14, 16, 17, 21-23, 25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/29/2004. Claim 23 recites "a drainage groove" which is present in Figure 3A and is directed to a non-elected species. Claim 25 recites "a geometric shape" which is present in Figures 2A and 2B and is directed to a non-elected species.

### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "726" has been used to designate both interior wall and spring. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because Figure 1B is not clearly separated from Figure 1A and many of the reference numbers are messy, faded, and unclear. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

4. The disclosure is objected to because of the following informalities: Page 9, lines 26 and 29 refer to both the spring and the interior wall as reference number 726..

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 13, 15, 18 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,133,386 to Magee.

Regarding claim 1, Magee discloses a valve assembly having a control body, opposed solenoid coils positioned at the ends (62), and a spool (12) positioned within a bore of the control body and between the opposing solenoid coils (see Figure 1), wherein the spool includes a mechanism to minimize fluid accumulation (19). See column 8 lines 30 to 33.

Regarding claim 2, the mechanism includes a seal (19) seated within a groove of the spool and in slidable contact with a wall of the bore of the control body. See Figure 1.

Regarding claim 3, the seal is an o-ring. See column 8 lines 30 to 33.

Regarding claim 4, the seal is proximate to the end of the control body. See Figure 1.

Regarding claim 13, Magee discloses a valve control body having:

- a control body

- a first solenoid coil (62) at the first end of the control body

-a second solenoid coil (62) positioned at the opposing end of the control body.

See Figure 1.

-a spool (12) positioned within the control body between the solenoid coils

-means for minimizing fluid accumulation (19) between a contact surface area between the spool and one the first and second solenoid coils.

Regarding claim 15, the means is a seal positioned about a circumference of the spool and in slidable contact with a bore wall of the control body. See column 8 lines 30 to 33.

Regarding claim 18, the means would inherently prevent a latching effect by minimizing fluid leakage.

7. Claim 24 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,133,386 to Magee.

The statement of intended use carries no patentable weight. The valve disclosed by Magee includes an element for reducing or minimizing latching effects and is inherently capable of being used as a replacement kit.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,964,406 to Zuo in view of U.S. Patent No. 5,133,386 to Magee.

Zuo discloses a fuel injector having:

- a body control valve having inlet port and working ports. See Figure 1.
- a first and second solenoid coil (13, 14) positioned at opposing ends of the control body.
- a slideably mounted spool (30) arranged between the first and second solenoid coils. See Figure 1.
- an intensifier chamber having a piston (50) and plunger (51) assembly, wherein the intensifier chamber is in fluid communication with the working ports. See Figure 1 and column 4 lines 21 to 45.
- a high pressure fuel chamber arranged below the portion of the plunger. See Figure 1.
- a needle chamber having a needle (60) responsive to an increased fuel pressure created in the high pressure chamber. See column 3 lines 39 to 55.

Zuo does not disclose means for minimizing fluid accumulation between the end of the spool and at least one of the first and second solenoid coils. Magee discloses a valve assembly having a seal seated within a groove of a spool that minimizes fluid accumulation between the end of the spool and at least one of the first and second solenoid coils. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the fuel injector of Zuo with the valve assembly of Magee in order to prevent fluid accumulation.

**Conclusion**


10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 5,251,671 to Hiroki discloses a spool valve assembly with solenoid coils on opposite ends. U.S. Patent No. 5,207,245 to Maranzano discloses a solenoid valve with o-ring seals. U.S. Patent No. 4,932,439 to McAuliffe, Jr. discloses a solenoid valve.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seth Barney whose telephone number is (571)272-4896. The examiner can normally be reached on 7:30am-5:00pm (Mon-Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on (571)272-4919. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seth Barney  
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